1:Beals E-5 (1940-1941)1946 NU34 Tarasco NU34
Sierra Tarascans
[p.216]

THE FARMING CYCLE

221 241 A clearer picture of the agricultural cycle may be given by a monthly summary.

January: Little to do; second plowing of maize lands may begin.

February: Second plowing of maize lands.

March: Maize planting begins.

April: Maize planting; first cultivation of early maize at end of month; planting of vegetables and maize in *solares*.

May: Wheat harvest; second cultivation of maize.

June: Second cultivation of maize; some wheat threshing (continued in dry weather throughout rest of year).

July: Fairly free month; weeding of maize begins; second cultivation of maize continues.

August: Plowing for wheat.

September: Planting wheat; cutting maize fodder.

October: Plowing for maize; rains usually end; cutting maize fodder; wheat threshing nearly finished.

November: Maize harvest (if lower lands planted); plowing.

December: Maize harvest on higher lands; plowing.

SOIL PREPARATION

241 Land is prepared for field and garden crops (except for small kitchen gardens of cabbage and herbs) by plowing one or more times (pl. 4, upper left). The plow used is usually a wooden type (fig. 3). The Government has given some 30 steel plows to the *municipio*, which lends them to farmers; although these are all in use, they care for only a small part of the plowing.

231 241 492 Regardless of the type of plow, it is almost always drawn by oxen. Mules, and perhaps horses, undoubtedly are used sometimes, but not as frequently as in adjoining Aranza; in the entire season of 1940–41 no single instance was observed on Cherán lands. If the wooden plow is used, the long plow beam is attached to the ox yoke directly. Steel plows are attached to the ox yoke by a chain. An ox goad of wood, often with a chisellike metal butt (for sticking in the ground), is employed.

[427] A great many farmers own oxen; if they do not, they must rent them at 75 centavos to 1 peso a day, depending on the demand. If drivers are hired, 50 centavos a day is usual. On the other hand, if a man has rented his land on shares, he must make sure his tenants plow at the right time. Usually land is plowed twice before planting, but the depth rarely exceeds 6 inches.

1:Beals E-5 (1940-1941)1946 NU34 Tarasco NU34
[pasb]

243 and none at all to stop attacks of weevils or bee-
251 tles. There are no mechanical corn shellers in Cherán, and bulk sales of unshelled maize are often made. Small amounts may be shelled for sale to storekeepers if there is need of a few cents in cash. One common method of shelling corn is to bind corncobs tightly with wire or cord to make a bundle about 12 inches in diameter. Maize ears are laid on the floor and rolled with this crude implement.

Black maize usually is not completely husked. Instead, pairs of ears are tied together and hung over poles in the house. The best ears are often hung on a pole on the veranda. Good field ears may also be hung in
[252] the house. Most black corn is consumed as
[796] roasting ears. Otherwise it is usually saved to make tamales in Easter week.

Discussion of land values, maize yields, and labor costs is deferred to the section on economics.

WHEAT

243 Wheat lands may be fertilized by hiring
[231] sheep to bed at night on wheat fields. Lands are plowed once before planting, and the seed is then sown broadcast. The land is then plowed lightly a second time, the furrows being at right angles to the first. Thorny brush, such as wild crab apple, is weighted and dragged across the furrows to break up large clods and to complete covering of the seed.

Some persons say only one kind of wheat is grown at Cherán, a type planted between September and November and maturing during the dry season. However, both bearded and beardless varieties were observed. Moreover, a few families have a so-called winter wheat
[821] ("winter" in Cherán is the rainy season, technically our summer) which is planted before the rainy season and matures in August or September. The more commonly grown wheat, it is said, would not survive so much water. Some other Tarascan towns near Tangancicuaro are reported to grow a reddish-colored wheat.

The dry-season wheat is short-stalked and often grows very sparsely. Moreover, most wheat is grown on inferior sloping lands or lands on which corn does not do well. Rains often appear to be inadequate to produce a

241 orate ornaments of wheat straw at harvest time, which are hung on the veranda or inside the house. Beliefs about these ornaments were denied.

No beliefs or customs were discovered regarding other plants except those connected with roasting the wild agave.

DOMESTIC ANIMALS

231 The domestic animals found in Cherán are cattle, horses, mules, burros, sheep, goats, pigs, dogs, cats, chickens, pigeons, and bees. Of these, cattle, burros, sheep, and pigs are the most numerous and of greatest economic importance. Turkeys, ducks, and geese are completely lacking, although they are found in [184] other Tarascan towns. Sevina, for example, has a fair number of turkeys.

Cattle.—Ownership of cattle is widespread 231 in Cherán, but accurate knowledge of the extent 556 of ownership is impossible because of the tendency to conceal wealth. As most cattle are kept at pasture, usually in the mountains, house censuses are of no value. Possession of cattle seems to make little difference in the economic position of their owners. Wealthy men often own herds of some size which they do not appear to exploit to their fullest extent. Such men, though, probably gain some social prestige, for their bulls will be sought for use in the bull riding which forms an important part of the fiesta of the patron saint of Cherán.

Cattle are raised for several economic uses: 231 meat, milk, draft animals, and sale outside the town. Somewhat different treatment is accorded animals raised for various purposes; consequently, separate discussion is indicated.

Relatively few cows are milked, and most 234 families do not keep milk cows. There is no special breeding for milk cattle and a "very good" cow will not give over 2 liters of milk a day. The milk is sold in Cherán, usually for pregnant women or sick people, or it is made into cheese. Only a small part of the local demand for cheese is supplied in this fashion, however. No butter is made.

[462] Milking is done only by men, but women clean the milk containers, make the cheese, and may care for the animals. Milking is done by primitive methods; the cow is tethered closely at the head and the hind legs are tied together.

234 The calf is then tied nearby while the cow is milked; it is then permitted to suckle.

The cow is milked only once a day and only from June to January or February while pastures are good. Ordinarily, the cows are kept and milked in the fields. If only one or two cows are milked, they may be pastured close to the village and driven into the house yard for milking. In this case, if the owner has feed, the cow may be milked after February.

231 492 Oxen, and sometimes bulls, are used extensively for plowing. In a very few cases they also draw two-wheeled carts to bring in the harvest, although most of this is done by pack animals. Oxen are broken to the yoke after they are fully grown, but fairly young steers are sometimes yoked together in the pastures in order to accustom them to traveling together.

231 Animals are not bred or raised specially for beef. Cows, bulls, and steers are killed, the main consideration being the fatness of the animal. A considerable number of the animals slaughtered are oxen considered to have outlived their usefulness as draft animals. Although specially fattened for slaughter, the beef is as tough as might be expected. Calves or young animals are never slaughtered. Animals dying of disease are not eaten in Cherán [184] but are in other towns. The hides of slaughtered cattle are valued according to prices in [435] adjacent Mexican markets.

Although Cherán raises more than enough cattle for its own use, cattle raising is not regarded as a very satisfactory business because of the lack of pasture during the latter part of the dry season. Usually, numbers of animals die of starvation during April and May. This is true of other grazing animals also.

When not in use, cattle are ordinarily pastured in the mountains. They are visited every third day to make sure they have not been stolen and that they are getting water. They are driven down to the farm lands and allowed to graze on the cornstalks or wheat stubble during the winter. This practice not only aids the animals over part of the dry season with its scanty pasturage, but is recognized as a means of fertilizing the soil.

[232] Little care is used in breeding, and new bulls are never brought in from outside. If a man owning a cow has no bull, he simply drives the

animal to a herd containing bulls. Sometimes he will seek a bull regarded as superior. There is no service fee. Cattle are branded when young and draft animals almost always are castrated.

Pigs.—Probably the pig is the second most important animal in Cherán; certainly it is the most common. Almost every family has at least one sow. If a family has no sow of its own, usually someone will lend a sow to be fed. In this case the litter is divided; should the animal lent be a male, the meat or proceeds of sale are shared.

The pig is raised for meat and fat or for sale, often outside the village. The skin has very little value. No use is made of the hoofs, but the entrails are prized as sausage casings. A not unimportant function of pigs is their service as scavengers.

Although some persons in Cherán were said to keep boars for breeding purposes and to charge a small fee for service (of from 25 centavos to 1 peso in Paricutin), evidently little care is taken in breeding. Most males are uncastrated until it is desired to fatten them. As the pigs roam the streets and nearby roads and woods during the day, little selective breeding seems possible. Normally, pigs are fed just enough corn to keep them returning home. At night they are placed in pens to protect them from coyotes.

Ordinarily only boars are fattened and slaughtered. Some people castrate their animals before fattening them, claiming they will fatten on less grain. Others dispute this, saying further that meat from castrated hogs has no flavor. Not every one knows how to castrate, but field notes do not indicate whether a charge is made for the operation when the aid of a neighbor is necessary. Animals being fattened are shut in small log pens with wooden floors, which are cleaned at frequent intervals. It is claimed that there are two types of pig, one of which fattens more readily than the other. At least 1 *fanega* (about 90.8 qts.) of maize is used in fattening a pig. Fattened pigs are normally sold to butchers; owners ordinarily kill their own pigs only for fiestas.

Sheep.—Although relatively few families own sheep, the number owned in Cherán is

236 Although mutton is eaten to some extent, sheep are raised primarily for wool. Sheep [262] are sheared twice a year, in late fall and early summer. A sheep yields about 1 pound of wool [435] in two shearings, which sells at from $1.00 to $1.25 (all monetary values are in Mexican currency). Black wool brings more than white (as it is all used locally for serape weaving).

233 *Goats.*—Only a few goats are raised. Normally they are herded with the sheep and are [234] treated like them. In rare instances the goats are milked, and the milk is made into cheese. [438] The most important use of goats is to sell them for food, usually outside the town, as goat meat [262] is rarely eaten in Cherán. Goatskins are sold uncured with the hair.

231 *Horses.*—Although some horses are bred in Cherán and some care is exercised in breeding, it is said the animals deteriorate because of the cold climate. Consequently, most horses are imported, but they also deteriorate rapidly. More important than the cold, undoubtedly, is the fact that no one in Cherán understands the care of horses. They are badly fed and receive little protection from the weather. Stallions are castrated.

In any case, horses are rare in Cherán and [492] are little used except as riding animals, especially by those with numerous cattle or pack animals. Riding and pack gear are the same [184] as those of the Mestizos. Although in other [241] Tarascan towns horses are used in plowing, this was denied in Cherán. A rather poor [435] horse costs about 70 pesos. Most horses be- [556] long to well-to-do men and primarily are indicators of social position. Attitudes toward owning a horse are a weak reflection of those of the vanishing Mexican *caballero*. Women almost never ride.

Horses are fed maize, oats, maize stalks, and [232] wheat or oat straw. Few people have any knowledge of treating illnesses of horses. [422] Ownership is indicated by branding, and horses [552] are given names similar to those used by [262] Mestizos. Horse meat is not eaten, but horse [281] hides are valued for tanning.

Mules.—Mules are even rarer than horses and have a higher value. Almost all are im- [492] ported. They are used mostly as pack animals, but occasionally they are ridden or used with the plow.

231 the plow. Care and practices otherwise are the same as for horses.

231 492 *Burros.*—"The poor man's mule" is one of the more common animals in Cherán. Often kept in a shed by the house, the burro is employed to bring in firewood (when he may be ridden to the woods), to bring in the harvest, carry goods on trading trips, and perform any other service of burden carrying. Burros may be used as light draft animals in such tasks as dragging brush over wheat fields to cover the seed after sowing. Often rented, especially at harvest time, burros are frequently lent to friends, neighbors, and relatives. Although hard-worked, they are usually better cared for and less abused than among the Mestizos. They are often fed rather than pastured, and saddle sores and other signs of abuse are relatively uncommon.

[262] [281] Burros are bred in the town. Jacks are not castrated. The flesh is never eaten and the hide is regarded as of little value.

231 *Dogs.*—Usually each household has one or perhaps two dogs, but large numbers of starved animals are rare. Ordinarily a dog is fed what the family has, and if a dog is underfed, usually the family is also. Dogs are always named, usually for "pretty things or animals" [552] such as Butterfly, Duke, Tiger, or Rattlesnake. Others are named for their coat color or because the name is liked. No effort is made to control the breeding of dogs.

Dogs are used in hunting, sheepherding, and to guard the house. In the latter capacity, the dogs of the *barrio* of Parícutin are much more aggressive than in the rest of the town. This may be because their masters are generally less friendly or may simply reflect the more rural character of the *barrio*.

[224] Hunting dogs are used to chase deer, squirrels, rabbits, and other animals after they have been wounded. Apparently no special training is given. Sheep dogs are trained by putting them on a leash with a sheep during the day and tying them near the sheep at night. They are encouraged to bark at the right time and to attack coyotes.

Cats.—Cats are not numerous in Cherán, although they are valued fairly highly because they combat the many rats which steal stored corn. Cats seem well treated and are some-

231 times petted. One reason for having cats is "because they give pleasure." They are given "pretty" names or names of affection such as [552] *Chulita* and *Negrita* ("Pretty Little One" and "Little Black One").

Cats are fed primarily on tortillas, although they usually are given a little of whatever the family is eating. Kittens are given away to friends and relatives; they are never killed, "for there are never enough cats." Strange [754] cats may be associated with witchcraft and might be mistreated or killed, but this apparently does not happen often. Eating of cats is denied, although young fat kitten is reported to be a delicacy for really poor people in nearby Mestizo towns.

235 *Chickens.*—Many people have no chickens and no one has large flocks. They are fed, but receive little care. Fowls are sometimes eaten on special occasions, such as a baptism, when a cooked fowl may be presented to the god- [262] father. Eggs are rarely eaten but are sold to [438] traveling egg merchants from Mestizo towns. [435] An average egg will sell for 5 or 6 centavos, which will buy enough beans for a whole family to have a meal, while one egg "will not satisfy even one person."

Chickens are fed whole corn or, if there are very few chickens, *nixtamal* (*masa* or corn dough for tortillas). Chicks are also fed *nixtamal.* Boxes or baskets are provided for nests. The first time a hen wishes to "set," it is not permitted, but it is the second time. Eggs from other hens are never placed under a "setting" hen. Small chicks are placed under box crates to protect them from "*onzas*" (from [136] descriptions, *onza* in Cherán means a small weasellike animal).

[541] Roosters are raised for cock fighting. However, organized cock fights are held only during the fiesta of Octava.

Pigeons.—Although regarded as a domestic animal, pigeons are really wild. Ownership is [422] not clear. As the birds are not fed, but help themselves to stored grain in the lofts of the houses, ownership presumably would be felt for the birds eating one's corn. The matter seems unimportant, as the birds are rarely eaten, although they are used in connection with the San Juan fiesta. If eaten, only adult [262] pigeons are killed.

231 *Bees*—While a moderate number of families have a few hives of bees, most of the apiculture in Cherán is carried on by a few men who may have 20 to 30 colonies. Only European bees are kept.

Beehives are wooden boxes, about 80 cm. long, 20 to 35 cm. wide, and 25 to 40 cm. high. The entrance is at one end, while the wax and honey are taken by opening the back. The hives are placed on benches or poles at intervals of about one-half meter. [825] Lizards are believed to eat the larvae. Flowers and scented herbs are often planted in the area surrounding the hives. Wherever bees are kept, copal [314] gum is burned in pottery censers. It is said to "feed" the bees because "the odor of copal is the odor of our Lord." It is believed it also prevents bees from leaving. No other ritual or belief could be discovered.

237 Honey and wax are usually taken from the hives in October or November. If delayed much after this time, the honey sugars and cannot be extracted. The honey gatherer places a net over his head and burns wheat straw to stupefy the bees. The top of the hive is smeared with honey so the bees will not leave. Should they leave the hive and not return by late afternoon, a small bell is rung to attract them.

231 When bees swarm, a bell is rung to make them alight in a nearby tree. A little honey is smeared over the inside of a box, which is then placed by the swarm. When a few bees have entered voluntarily, most of the remainder are brushed in and the box is closed and put in place. When it is opened, the bees usually remain. The function of the queen is known, and beekeepers can identify her.

One of the largest apiaries in Cherán contains 42 hives. The owner started beekeeping 17 years ago when he encountered a wild colony in the mountains and brought it home. He [438] recovers 10 kilos of wax a year, which he sells [435] in Cherán at $2.50 a kilo, and between 40 and 50 pounds of honey. Most of the latter he sells in small quantities at his home, but some is sold to stores.

[462] All the work of caring for bees is done by men (with one exception, a widow), but if the wax is bleached, this may be done by women. [373] Wax is used mainly for making candles.

231 [237] Honey is used primarily to sweeten atole and as a treat for children.[11]

[263] For the village of Capacuaro, Silvia Rendón reports what are probably native bees kept in sections of hollow log hung on the walls. She was told they produced "Campeche wax" (*cera de Campeche*).

Pets.—Only domesticated animals are pets. Dogs and cats are most commonly treated as pets, being stroked, fondled, picked up, or played with. However, this is not true of all dogs or cats, nor is it true of all individuals. Pigs often seem to be treated as pets, especially young animals, but they are not picked up or fondled. Kids are sometimes pets, especially if the mother had died and the animal has been reared by hand. Even more common, although by no means general, are sheep. Lambs are placed on a leash until half-grown; after this they follow their masters everywhere, even to automobiles. Many children have lambs as pets. One boy of 10 had an immaculately washed white lamb with a red sash tied about its middle. The lamb followed him everywhere and was even trained to stand on the pack pad of a burro so it could be taken to the mountains on wood-cutting trips.

Beliefs and ceremonies.—The only ceremony connected with domestic animals is burning copal for bees. Beliefs are likewise few. The association of cats with witchcraft has been noted. If a dog sits down and howls by day closeby, it is a sign something bad is going to happen. Coyotes are believed able to bewitch [825] the domestic animals they eat, especially chickens. "Coyotes just shake themselves and chickens will go right to them."

Curing of animals.—A few men are specialists at curing animals. They are usually paid 232 for their services. Wounds and sores are cleaned by washing with lukewarm water, to which salt is sometimes added, until all pus is removed and bleeding begins. If the wound is deep, a wick of cloth may be inserted to keep it open; sometimes peroxide of hydrogen is used as a disinfectant, but creosote is more

[184] [11] Beekeeping is very popular in La Cañada. Nearly every family has at least a few hives. Much of the honey is used in the household, and only the surplus and the wax are sold. Burning of copal is not practiced.

In Angáhuan and Paricutín only a few people keep bees. The largest apiary in Paricutín contained only four hives, and only three people possessed hives.

243 433 427 cropping basis. The number of sharecroppers in Cherán is unknown, but probably is considerable. Small landowners often farm additional lands on this basis, and some fairly prosperous families are sharecroppers.

The rental paid by sharecroppers is usually one-half the crop. In the case of our average hectare this would mean the owner received 7½ to 10 *fanegas* of maize worth from $37.50 to $60.00. This might well be equal to more than a 50 percent return on the investment in land. As even the most exorbitant interest rates on cash loans from banks would not exceed 15 percent, it would appear to be a very good business to borrow money to buy land for rental on a sharecropping basis. Yet such a procedure, so far as could be discovered, is seldom if ever followed. Moreover, persons with money will lend on land as a security, receiving only interest, instead of buying land which would appear to offer a relatively larger return. (But short-term loans are at a much higher rate of interest. See p. 63.)

231 243 427 434 A number of factors still have not been treated in the foregoing discussion. It should be observed that the hypothetical farmer could still further decrease his cash outlay if he owned his own ox team. Such a team would be worth from $100 to $120, depending on size. Ownership of a team would save about $30 a year in rental in cultivating a hectare. In addition, there might be opportunities to rent the team at $1 a day for perhaps 30 days to work on maize lands and perhaps for another 30 days during the wheat season. As there is less demand in the latter time, the rental probably would be only 75 centavos a day. The returns from rentals, however, would possibly be $52.50 a year. If the saving of $30 for rentals on the farmer's own land were included the investment in an ox team obviously would be a very good one.

Ownership of livestock, however, involves the problem of feed. Mostly the feed is secured by cutting the *rastrojo* or corn fodder. Wheat straw is also fed. Part of the year animals may be grazed on the common pastures. Rarely, however, is enough feed produced, and in a bad year there is always danger of losing animals during the latter part of the dry season. Ownership of oxen also increases the

231 243 427 434 amount of labor. Not only must *rastrojo* be cut, but the animals must be visited every 2 or 3 days while in pasture.

The question may be raised why horses or mules have not replaced oxen to any extent. Although horses or mules will do at least twice the amount of work in a day, owing to their greater speed and ability to work longer hours, they do not thrive on the corn fodder, wheat straw, and scanty pasturage. Grain feed is also necessary, at least during the working season. In general, horses and mules are more delicate and require more attention, greater skill, and better shelter. Finally, their initial cost is greater and they cannot be slaughtered for meat, as are oxen, when they have outlived their usefulness as draft animals.

243 433 311 *Wheat.*—Although wheat is the primary cash crop of Cherán, it is seldom grown on lands which will produce good maize. Wheat is often grown on inferior land, often on slopes, but never on really bad lands. Farmers using good land for wheat usually have a surplus of maize lands.

243 461 433 The cultivation of wheat takes a little less labor than does that of maize. Plowing is the same or perhaps a little less (the second plowing being shallower). Broadcasting of seed and harrowing equate with maize planting, but it is a one-man job and requires no oxen if the farmer owns a burro. The primitive harvesting with a sickle would seem to call for more labor, but estimates were fairly low. A summary of estimates for cultivating a hectare follows:

	Days	
Labor:		
First plowing	10	
Second plowing	10	
Sowing and harrowing	2	(or less)
Harvesting	4½	
Total labor	26½	
Costs:		
Labor (26½ days at $0.45, value)	$11.92	
Rent of oxen (20 days at $0.75, value)	15.00	
Taxes	1.00	
Seed	1.00	
Total production costs	$28.92	
Interest on capital investment	11.00	
Total cost of cultivation	$39.92	

241 maize. Case 3 owns a store run by his chil-
434 dren, but he regards himself as a farmer by
511 preference. Even without his store, he would be well off by Cherán standards, although not a "rich man." In 1940 he produced nearly enough maize for his family and sold over $300 worth of wheat. In 1941 he probably was able to sell not less than 35 *fanegas* of maize above his family's food needs (less if he raised pigs or fattened beef for butchering). Case 4 is a widow. Her land is cultivated by a nephew, but under what circumstances is not known. If the nephew lives with her, the amount of maize is a little inadequate; on the other hand, if she lives alone, the quantity is more than enough for one person.

ANIMAL HUSBANDRY

231 It is virtually impossible to secure useful
434 data on labor costs or profits in relation to animals. Under agriculture I have mentioned some of the facts about oxen. No data were collected on chicken raising; probably no one in Cherán knows how much grain he feeds chickens or how many eggs a year he gets.
[435] Prices vary from 2 to 6 centavos per egg. The situation about pigs is little better.

Virtually everyone keeps pigs; no one has any idea of the total amount of grain fed except during the fattening period. Shoats have little value and are frequently given away. Data on labor are lacking, yet the labor cost cannot be negligible when the animal is being fattened and its pen is cleaned frequently. A

231 434 [435] pig takes from 1 to 2½ *fanegas* of maize to fatten, valued at from $5 to $7. According to size, the animal may bring from $30 to $75, a gross profit on the fattening process of from $12.50 to $70.00. This would be 5 to 7 pesos less if the pig was bought. If an adequate market were developed, or if sales and transport facilities at a distance were to be developed, pig raising might be a more important activity, although an increase in the number of pigs would decrease the amount of foraging possible and would require more feeding.

236 434 [435] [465] Sheep raising is engaged in by only a few. The reliability of the major informants is suspect, but the evidence suggests that sheep raising is profitable. The major expense is the initial cost of the flock and the wages of a shepherd. Sheep are worth $2.50 to $5.00 apiece. Shepherds' wages vary with the size of the flock, but probably rarely exceed $20 a month plus a *fanega* of maize and one sheep for food; most shepherds receive considerably less, often only $5 a month without food. Often several small owners merge their flocks and hire a single shepherd.

[435] [262] Income from sheep is mainly from wool and payments to have the flocks bedded on farm land. Sheep average a pound of wool a year (this seems low but the sheep are of poor quality), which sells for $1 to $1.25. A fair-size flock of sheep would bring 50 centavos a night for fertilizer. A few sheep are sold for meat outside the village; almost no lamb or mutton is eaten in Cherán. No data were secured on prices. Mortality on sheep is high, but again no usable data were obtainable.

A flock of 200 sheep studied represents an investment of $750 in theory although it probably was built up by natural increase from a smaller flock. The shepherd receives $20 a month, 1 *fanega* of maize worth at least $5, and a sheep worth, on an average, $3.75, or a total of $28.75 a month ($345 a year). Wool would produce $200 to $250 a year. Bedding on farm lands would produce probably 50 centavos a night for this flock for 110 days (estimated) or $55. Total income from these sources would be $255 to $305 a year. The natural increase may safely be assumed to be 75 head. Sold at $2.50 apiece, they would bring in $187.50 a

236 year, or a total of $442.50 to $492.50 a year.
434 Deducting expenses of $345 leaves a return on the investment of $107.50 to $147.50. As indicated before, these figures are suspect. The owner of this flock is not believed to be
[124] very truthful on financial matters. For example, he claimed to own 20 sheep; Augustín Rangel said he had over 200. He is, though, a hard-headed storekeeper and farmer who would not keep sheep if they were not profitable. The most suspect item in the calculations is the amount of wool per sheep.

231 The evaluation of the role of the burro is as
434 difficult as in the case of oxen. Burros reduce the cost of numerous operations by saving the rental of animals, they facilitate such tasks as bringing in wood (which otherwise would be carried in by the woodcutter rather than on rented animals), and they may be rented. Burros involve little investment—$30 to $40—but they do require attention while in pasture and the provision of feed when kept at home. Although burros not in use are often lent, they
[427] sometimes are rented. Information on rentals is contradictory; at the harvest season, when demand is highest, rentals are probably about 50 centavos a day plus feed for the animals.

The ensuing topics are dealt with in summary
313 form to bring out the essential factors of
434 capital, labor costs, cost of materials, and income.

433 **WOODWORKING**

Shake making:

Tools:

Ax, wedges, machete, splitting tool

Product:

[435] ½ irepita (an irepita, or bundle, is 400) a day at $5.00

Profits (return on labor, less interest on capital, etc.) $2.50

Comment: Shake making is a well-paying occupation, but profits are less than the data above suggest. Shakes are made either only to order or are sold in Uruapan or some other Mestizo center. In the latter case the man may work regularly, but must spend 1 or 2 days a week taking his product to market. Neither does the estimated result for a day's labor include the time spent searching for a suitable tree. Usually only a 5-day week or less is worked and the season is confined to the rainy period. As a result, shake makers must shift to other work, such as plank making, tie cutting, farming, etc. The term "profits" is loosely used throughout, as wages are often included.

253 15 *arrobas* (375 pounds) $90
433 14 *arrobas* (350 pounds) 65
434 16 *arrobas* (400 pounds) 92

434 Retail price (per kilo) ..... .70
Gross profit on beef (per kilo) ..... .40–.45
Price of pigs ..... 30.00 and up
Gross profit, per week 7.00–8.00
Gross profit, per pig 3.50–8.00

Comment: Returns to butchers are slight on the basis of meat sales. Generally the profit consists of: (a) Meat for the family at no cost, and (b) sale of the hide, usually for $10.00. Most butchers handle beef only, but one who specializes on pork, butchering one or two a week, claimed a profit of 7 or 8 pesos. An item unaccounted for in the figures for beef is a tax of [651] $5.00 on each animal killed. It is also widely believed that some butchers deal in stolen cattle at a considerable profit. Few butchers lack other sources of income, however, which argues against great profits. Butchering also varies in profitableness at various seasons; when cheese is abundant the demand for meat falls off, and the butcher may have to dry part of his meat and sell it at a lower price.

241 *Field watchers:*
434 Wages:
In maize ..... 1 row in 30
Average income for 6 weeks to 2 months (cash value of maize) ..... $60–$65

Comment: Field watchers (*veladores*) must be men of good reputation. Usually they watch 20 to 25 pieces of land. Although wages seem high—$1 a day or more—the work is seasonal and involves staying day and night in the fields.

312 *Water carrying:*
434 Charge for two 25-liter cans $0.06

Comment: Only one man engages in this work regularly. He works fairly steadily, but no data were secured on his income. Presumably it is as good or better than he could earn as a laborer.

● 231 *Beekeeping:*
433 12 hives produced:
434 15 liters of honey at $0.60 ..... $ 9.00
3–4 kilos of wax at $2.25–$2.50 6.70–10.00
Wax:
1 kilo makes 10–centavo candles worth 3.00– 3.25
3–4 kilos make 10–centavo candles worth 9.00–13.00
Potential income from 12 hives if owner makes candles 18.00–22.00

Comment: In all cases bees are kept as a profitable, but not extremely important, sideline to other activites.

389 *Fireworks making:*
433 Figures from the one fireworks maker in Cherán
434 proved inconsistent upon analysis. The following facts seem reasonable.

1:Beals E-5 (1940-1941)1946 NU34 Tarasco NU34
[p.92b] Sierra Tarascans

963 sions of the town. This feature will be discussed later.

633 A larger subdivision than the block is
103 furnished by the *barrio* as indicated in maps 4 and 5. These divisions function in relation to elections, office holding, and certain municipal and ceremonial obligations. *Barrio* No. I is to the northwest and is known as Jalúkutin, or in Hispanicized form Urúkutin. This name is said to mean "something on edge" or "something in a small corner," apparently referring either to its position on the edge of the largest *barranca* or its position against the small hill on the northeast edge of town. *Barrio* No. II is called "Keíku," "down," or the lower *barrio* (*barrio de abajo*), and is the southwest *barrio*. The southeast *barrio*, No. III, is "Kalákua," "up," the upper *barrio* (*barrio de arriba*). *Barrios* II and III are usually known by their Spanish terms, and not everyone knows the Tarascan names. The fourth *barrio* is Paricutin. This means "to pass to the other side" and refers to the position of the *barrio* on the other side of a *barranca*.

633 The *barrios* show very few differences.
184 Paricutin is less populated, has larger lots, and is said formerly to have been more isolated and backward, with fewer people speaking Spanish. The staff of the investigation all had the impression that this is still true to some extent, although little concrete evidence could be secured. Certainly, as the staff can well attest,
[231] the dogs of Paricutin are far less socialized than those of the remainder of the town.

633 Membership in the *barrio* is based entirely on residence. Property owners who reside in another *barrio* have *barrio* obligations only in the place of residence. There is no rivalry between *barrios* nor any instances in which *barrios* act as units on their own initiative. All the functions of the *barrio* appear to be derived from the *municipio*. There is no evidence whatever that the *barrio* has anything to do with regulating marriage or other social relationships. Even *barrio* chapels are lacking. In all probability the subdivisions are of Spanish origin and the only reason for suspecting otherwise lies in the mention of *barrios* by early Spanish writers in nearby areas.[37]

[37] On the other hand, as Silvio Zavala has shown fairly convincingly, Bishop Quiroga, first bishop of Michoacán and great

343 Sheds are usually built leaning against a house
335 or wall. They consist ordinarily of only a sloping roof of shakes supported by a crude home-made framework. The upper end of the roof rests against the house or wall, the lower end is supported by posts. A great variety of crudely built structures is found, serving for hen houses, barns, storage of fodder, or toilets. Crude roofs called "*pestaña*" are also built over entrances to houses and kitchens (pl. 2, upper).

343 Many houses have pigpens made of poles.
231 These often have an entrance directly from the street which can be closed from inside. As a rule pigs roam the streets during the day. At night they must be penned carefully, especially in the outskirts of town. Otherwise, coyotes may kill them.

354 In some house yards there are large domed
[427] ovens, used primarily for making bread. They are often rented to bakers who do not have ovens. The construction is mostly of adobe but sometimes stone is used about the entrance and in foundations. A rough shake roof supported by poles protects the oven from the rain.

343 Temporary shades (ónjetarakua) are built of poles and covered with branches and grass for use in weddings and fiestas.

SPECIALIZATION AND DISTRIBUTION OF SKILLS

463 distribution of skills difficult. The following list of specialists, then, merely gives those who make a major part of their living from the specialty indicated. In some cases, the individuals no doubt get all their living from their professional occupation; in others, they either farm themselves, do farm work, or are employing farmers.

Carpenters	9
Masons	5
Brick and tile makers	2

The above represents a fairly accurate census of those men in Cherán who have special skills and who would be hired for work in their field by others if possible. To put it another way, the average man would recognize that one of these specialists would do a more competent and finished job than he could do himself; consequently, any ordinary man would make some sacrifices to employ these

243 412 to the lower point of the frame. This instrument stirs, rather than turns, the soil to a depth of less than 6 inches. Within the last 50 years many Tarascans have used a small adaptation of the North European moldboard plowshare for breaking new land and for first and second plowings. For planting and cultivating maize the moldboard (which is slipped over the end of the plow frame) is replaced by the *reja*. As mentioned above, in recent years the Mexican government has supplied a number of American steel plows to various 243 Tarascan municipios.

● [231] Oxen are used almost exclusively to pull the plow, to which they are hitched by the horn yoke. Mules and horses sometimes supplement oxen during maize cultivation, when the work must be done quickly. Before being planted, maize fields are plowed, this operation being called *barbecho*. In the Sierra the *humedad* maize lands in the plains are plowed twice, once in late summer and again in late winter. Temporal maize fields located outside the Sierra undergo only one plowing—in late May or early June, immediately before the rains. For planting, rows are formed with the plow equipped with the straight *reja*. Usually rows follow the contour on slopes. Two to three seeds are dropped at 1-foot intervals into the furrow by a boy following the plow and driver. Often the boy covers the seed with earth to a depth of 3 or 4 inches with a sweep of his foot. If animals are available, the first plow is followed by a second, which covers the grain by throwing earth from the interfurrow ridge (pl. 5). This plow is often equipped with a horizontal beam (*orejera*), placed back of the *reja*, which rakes earth into the furrow. Maize is normally cultivated (earth thrown toward the plant and weeds eradicated) twice with the plow, once when the plant is about 1½ feet high (*escarda*) and again when the plant begins to tassel (*segunda*). Thereafter, fields are weeded by hand or with the hoe. [412] Zacatón (a form of Johnson grass) is cut with the *juds*, a machetelike sickle, similar to the *garabato* of the *tierra caliente*.[88]

412 243 Several forms of the pre-Columbian planting stick are still used in the maize fields of the Sierra (fig. 3). These instruments, called meiánta-

[TEXT CONTINUES TOP OF P. 384 – ANALYSIS]

[104] [88] The Sierra Tarascans use many terms to describe maize in its various stages of growth. When the plant is about 4 inches high (3 weeks after planting), it is called pirán; at 1½ feet (ready for the *escarda*), káni or tajíta; when in tassel, pájita; when ears are in hair, tuxíni or tuxájti.

4: West K-5 (1946) 1948 NU34 Tarasco NU34
[P 40-9]

262
252 the above-named foods is the highly colored flour types grown in the house-lot gardens.

Pinole has the widest distribution and is possibly the most ancient of the maize foods in the New World. Among the Tarascans usually yellow maize from the *desmontes* is employed for pinole. The grain is toasted on the *comal*, then dry-ground on the metate, piloncillo being mixed in during the grinding process. *Pinole* is used almost exclusively for food on long trips. *Esquite* is prepared also by toasting whole grains of dried sweet or black *elote* corn on the *comal*, but it is not ground.

The preparation of tamales, pozole, atole, and tortillas among the Sierra Tarascans is discussed by Beals (1946, pp. 49–52). In preparing all four types, hard-shelled maize is first soaked and cooked in lime water to soften or remove the hard outer shell that covers each grain. (Beals mentions the use of oak ashes in soaking corn for pozole.) For tamales, atoles, and tortillas the soaked grains are wet-ground on the metate or in power-operated grinding mills (*molinos de nixtamal*). The fact that they form an essential part of fiesta and ritual foods of most Mexican Indians suggests that tamales and atoles may be more ancient than tortillas. The latter are commonplace in each of the two or three daily meals and carry no ritual significance. Moreover, the varieties of both tamales and atoles are numerous. Beals describes 10 atoles habitually made in Cherán; 11 kinds were noted in Sicuicho, only 5 of which were similar to those in Cherán. The varieties of atole are ordinarily distinguished by the addition of some flavoring, such as ground blackberries or herbs.

● 231 *Animal feed.*—Maize grain is commonly fed to livestock, notably for fattening hogs. Yellow corn, mainly Mountain Yellow, is considered the best for feed, as it has the highest oil content of all Tarascan corns; moreover, apparently the yellow color gene is associated with proper vitamin content for animal growth and fattening.[a]

439 *Sale of maize.*—The Tarascan Sierra is primarily a subsistence area in terms of maize, but when crops are good surplus grain is sold to buyers from Zamora, Tangamdcuaro, Uruapan, and Zacapu. The surplus maize districts are

[a] According to Edgar Anderson (personal communication), in Jalisco the Yellow Mountain maize brought down from the highlands sells at a premium in the low-lying districts south of Guadalajara.

4: West K-5 (1946) 1948 NU34 Tarasco NU34
[P. 47-b]

addition to the gardens of Lake Pátzcuaro, commercial truck farming is also carried on in La Cañada and in Atapan, but on a smaller scale. There, fields are irrigated by diverting water from streams, a technique probably learned from Europeans.[103]

The native chile, *jitomate* (tom-kuaraki), *tomate*, and green beans (*ejotes*) and the Old World onion, garlic, cabbage, and lettuce are the principal products of the commercial gardens. Chile is the most significant of these, in terms of both acreage and market value. The fruit of this plant, a vitamin-rich gastrin, has always been important in the aboriginal diet. Two species of *Capsicum* are cultivated: *C. annuum*, the common herbaceous annual, and *C. fructescens*, the perennial shrub (*chile de árbol*). The latter is cultivated mainly in the house gardens. Both species require a long growing season and abundant water; consequently chile cultivation is absent from the Sierra, but is found in the surrounding well-watered areas. Chile, therefore, has ever been a trade article between the Sierra and its borderlands.[104] Tarascan Puácuaro, Uricho, Arúcutin, and mestizo Tócuaro and Erongarícuaro are the main chile producers of the Lake. Most of the La Cañada pueblos raise some chile for export into the Sierra, but Etúcuaro, outside the valley, is the largest producer of that general district. All these areas raise *chile verde*, rather than the *chile seco* of the *tierra caliente* and Lake Cuitzeo district.[105] In both the Lake Pátzcuaro and La Cañada areas chile and tomatoes are first planted in the *almáciga*, or hotbed, in December.[106] Replanting in the gardens is done in March, and the vegetables are harvested from June through September.

STOCK RAISING AND ANIMAL PRODUCTS

Modern Tarascans raise most of the European animal domesticates. Most households own a team of oxen for plowing and one or two burros for hauling wood and carrying produce to market.

[Text continues top of P. 49a-Ind139]

[103] In several formerly Tarascan towns in the northern plateau area vegetables are cultivated on a commercial scale. The truck farming around Zirícuaro, southeast of Lake Cuitzeo, was significant during the latter part of the 18th century. Tarascan horticulturists of this pueblo carried vegetable produce as far as the Toluca market (AGN Historia, vol. 73, f. 265).

[104] The Tarascan name for Chilchota is *tirápu*, which means green chile. The Sierra people have always thought of La Cañada as a producer of chile, as well as other vegetables and fruits.

[105] The chief varieties of *C. annuum* in the Lake district are *humbrillo* (*verde*), *amarillo*, and *relleno* (*bell chile*). *Chile seco* from the *tierra caliente* reaches the Sierra through the markets at Uruapan, Pátzcuaro, and Los Reyes.

[106] The *almáciga* is likely a European introduction, although it was pre-Columbian in the *chinampa* district in the Valley of Mexico.

293 During the summer months boys and girls are
[883] the full-time shepherds, driving herds up the mountain slope each morning and down to the folds near the house at evening. The elders perform the semiannual shearing and often tend the flocks in the cornfields during the winter. Professional shepherds are sometimes hired by sheep owners to care for their flocks.

The sheep of the Tarascans are small, scrawny animals, descendants of the 16th-century Spanish breeds. In a given flock about half the animals are black, the rest white (pl. 7). Often a few goats graze with the flock. The Indians are usually financially unable to improve the breed with new blood; in only one case did the writer
236 observe a merino ram. The Tarascans raise sheep mainly for wool. The *rancheros* around Cerro de Patamban shear their animals with hand clippers every 6 months. Some wool is obtained also by the girl shepherds, who pluck from the backs of sheep while the animals are grazing; as she plucks, the girl spins the wool on a whorl spindle, completing a ball of yarn as large as the fist at the end of day. In many villages local wool is used for weaving, many weavers possessing their own flocks. Otherwise the wool clip is sold to people from other villages or to mestizo wholesale buyers.

231 The hog was the first European animal domesti-
177 cate that the Spaniards brought into the Tarascan area in quantity, and was possibly one of the first of the new animals adopted into Indian culture. As early as 1525 Spaniards were raising large droves of hogs in the vicinity of Pátzcuaro in order to supply food to placer operations in the Balsas (Millares Carlo and Mantecón, 1945, p. 32).[110] Indians were used as swineherds. Throughout the colonial period large numbers of hogs were fed in the marsh areas north of the Sierra and droves were periodically driven to Toluca and the valley of Mexico (Paso y Troncoso, 1905, vol. 1, p. 180). Today the hog is common in
231 every Tarascan village. Practically every household owns two or three animals, which serve as scavengers, running the streets by day; enough maize and scraps are fed the animals to induce them to return at night to the proper pen in the

[110] The hog appears to have been the first Old World animal raised on a large scale in New Spain. Moreover, hog culture was intimately connected with gold placering in Oaxaca, Guerrero, and Michoacán (1531–35). Droves were driven along with the shifting placer camps, the animals feeding on fallen tropical fruits (e. g. the *ciruela*), roots, and wild tubers in the *tierra caliente*. "*Carne de puerco*" was the chief "energy" food given the Indian labor gangs.

231 house lot. Droves of pigs are never mast-fed in the forest. Hogs are fattened on corn and sold; as pork is well liked, they are often killed for food and for lard, now indispensable in European-modified Indian cookery.

Other animal domesticates include fowls and bees. The turkey (kuɾúka),[111] the only native domesticated fowl in the area, is more common in mestizo towns than in Tarascan villages. The European chicken (ɸíkata,)[112] however, is ubiquitous; practically every Indian household has a flock of five or six. A single breed, probably descendent from the Spanish fowls introduced early in the 16th century, predominates.[113] Improved breeds have penetrated only into large mestizo towns on the edge of the indigenous area. Several families in every Tarascan pueblo keep a few hives of European bees in the house lot. Hives consist of rows of small wooden rectangular boxes placed on benches (pl. 7). In some Sierra villages (e. g. Capacuaro) native bees hive in sections of logs hung on the outside wall of the
[263] house. Both honey (for sweetening) and wax
[237] (for religious candles) are extracted from the hives in November or December.

Animal foods in Tarascan diet.—Tarascans eat
262 meat whenever it is available and can be afforded.
252 Chunks of boiled beef are one of the chief ingredients of čuɾípu. This dish is also made of the heart, liver, intestines, and lungs. Other beef dishes prepared in most Tarascan pueblos are: a stew, or atápakua, thickened with *mole;* uiɾíkata, or meat broiled over charcoal or on the *comal*; various cuts fried in the *cazuela*; *menudo*, or stomach lining boiled and served with ground chile; dried salted meat (*cecina*); steamed beef heads (including tongue and brains), called *virria* or *babaqua*.[114]

[235] Neither cow nor goat milk is popular among Tarascans. Some milk cows are kept in the larger villages to supply the pregnant and the sick. Little cheese is made locally, most being brought in from the *tierra caliente*.

Although well liked by most Tarascans, mutton

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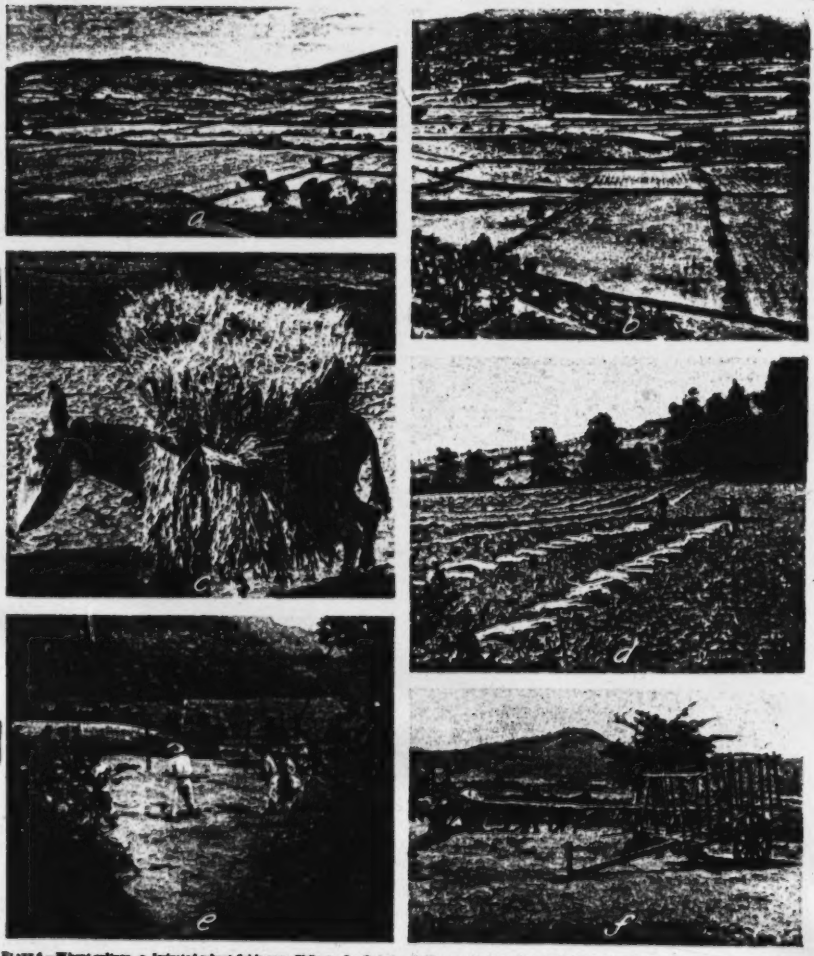
[111] The word kuɾúku is apparently onomatopoeic; ɸíkata-ambá or "good chicken," is also used as a name for turkey.

[112] The word "ɸíkata" is Tarascan for a wild grouse, and was evidently applied to the chicken soon after its introduction.

[113] Hens are small, dull brown, often speckled with yellow and black; cocks are reddish brown with highly colored tail, wing, and neck feathers.

[114] Some of the above Tarascan words are also applied to stews and roasts of deer meat. With the possible exception of čuɾípu, uiɾíkata, and atápakua, all meat dishes prepared by modern Tarascans are of Spanish origin.

241



[492]
[231]

[493]

PLATE 6.—Wheat culture. a, Irrigated wheat fields near Chilleta, La Cañada. b, Temporal wheat fields on the northern edge of the Sierra, near Tiríndaro. c, Method of hauling wheat bundles to the threshing floor, Ajos. d, Cutting wheat with the sickle, near Pichátaro. e, Threshing wheat with fork, flail, and by driving animals over it with horses, at Cumanjo. The sarvete (right) is used in many parts of Tarasco to haul wheat bundles and maize fodder.

[End-plate 6]

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231
[342]

[406]
[312]

PLATE 7.—Horticulture and domestic animals. *a*, Large plowed circles, San Felipe. Note maize (*pan silbando*) top. *b*, Small patch of cabbage in house lot, San Felipe. *c*, Vines of ebeyote in circles, Tzacapillo, La Cañada. *d*, Irrigated vegetable plots along west shore of Lake Pátzcuaro, near Arócutin. *e*, Dish well and poles (*t'apiratárhuata*) used to lift water from ditch to irrigate fields. Near Urichu. *f*, Sheep grazing in harvested maize field, near Tzacapu. *g*, Herding sheep near summit of Cerro de Pátamban. The flock is from the rancho of Uringuitiro. *h*, Sun hives in house lot, Arócutin.

[End-plate 7]

7